

83-603 Function test of total system and remedies (with tester)

A. Test program and remedies (USA starting model year 1977)

Note

The test program should be performed in the event of unknown causes of a defect, uncertain customer complaints, following repairs to make sure of all functions.

The tests include the cooperation of individual components. If a test step is to be repeated, set to previous test step first and wait for 1 minute. If a defect is indicated within a test step, complete the following remedies first prior to continuing the test.

- 1 Run engine at idle (operating temperature). Voltmeter switch in position "blower volts".

Note: The values and operating positions shown in bold print represent in each case the end condition of the test steps.

Test position		Results									
Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Voltmeter readout + 1.5 V - 0.5 V	Change from stage to stage after approx. s	Blower stages	Refrigerant compressor
OFF	1	ON	PARK	open	closed	closed	closed	0	0	off	

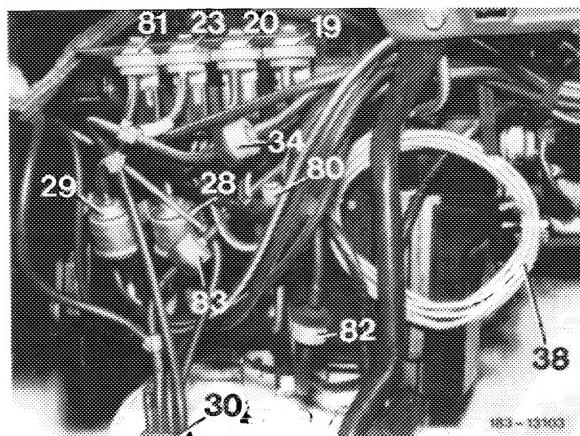
Remedies following indication of defect

- 1 Test vacuum system according to function diagram 1 (83-604).
- 2 Test black vacuum line from connection (3) pushbutton switch to regulating valve connection (1) or vent line (39) for passage. Possibly not vented via pushbutton switch connection (3).
- 3 Test vacuum circuit I, II, VI (83-620 and 624).

4 Test electrical system according to wiring diagram 1 and 1 a (83–605).

5 Pull plug from vacuum switch (19, 20 and 23), test with ohmmeter, no passage.

- 19 Vacuum switch (main switch, green)
- 20 Vacuum switch (refrigerant compressor, yellow)
- 23 Vacuum switch for refrigerant compressor (at "BI-LEVEL" only)
- 28 Switchover valve legroom flaps
- 29 Switchover valve (fresh air-recirculated air flap)
- 34 Check valve
- 38 Specified leak point
- 80 Switchover valve "BI-LEVEL" (at "DEF")
- 81 Vacuum switch (at "BI-LEVEL" only)
- 82 Check valve
- 83 Check valve



Test position

Results

Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Voltmeter readout + 1.5 V - 0.5 V	Change to stage after approx. s	Blower stages	Refrigerant compressor
AUTO-LO	2	ON	PARK	open	closed	closed	100	5.0		2 LO	on
	3	ON	AC	open open open	closed closed closed	closed closed closed	100 100 20	6.0 6.5 7.0	10 6 5	3 LO 4 LO 5 LO	on

Remedy following indication of defect

1 Test vacuum system according to function diagram 2 and 3 (83–604).

2 Test vacuum circuit I, II, III, IV and V (83–620, 622 and 624).

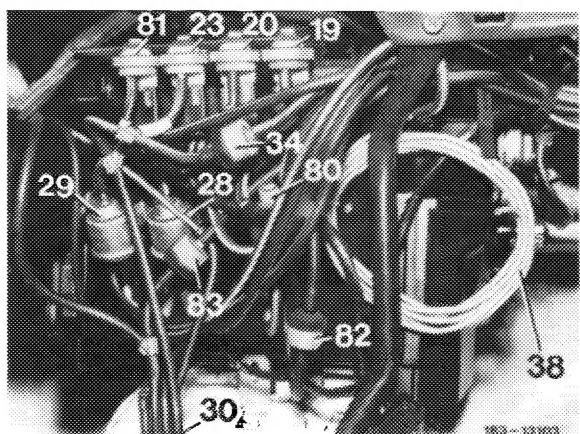
3 Test electrical system according to wiring diagram 2 and 3 (83–605).

4 Test vacuum switch (19) for passage.

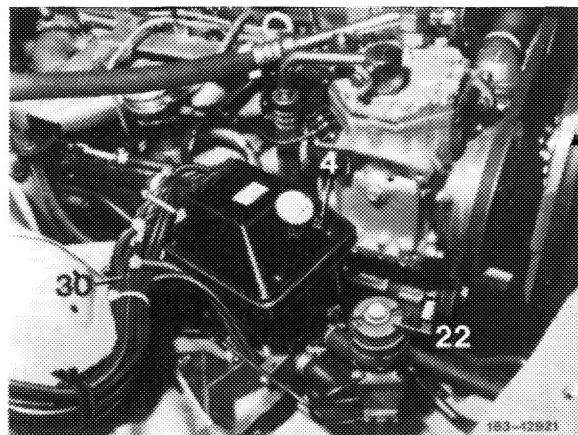
5 Perform amplifier test (83–606).

6 Check feedback potentiometer in regulating valve (83–610).

- 19 Vacuum switch (main switch, green)
- 20 Vacuum switch (refrigerant compressor, yellow)
- 23 Vacuum switch for refrigerant compressor (at "BI-LEVEL" only)
- 28 Switchover valve legroom flaps
- 29 Switchover valve (fresh air-recirculated air flap)
- 34 Check valve
- 38 Specified leak point
- 80 Switchover valve "BI-LEVEL" (at "DEF")
- 81 Vacuum switch (at "BI-LEVEL" only)
- 82 Check valve
- 83 Check valve



7 Connect new regulating valve (4) for tryout.



Layout regulating valve with heating water pump

- 2 Regulating valve
- 22 Heating water pump
- 30 Vacuum lines

Test position			Results									
Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Voltmeter readout + 1.5 V - 0.5 V	Change from stage to stage after approx. s	Blower stages	Refrigerant compressor	
AUTO-LO	4	OFF	AC	open	open	closed	100	7.0	—	5 LO	off	

Remedy following indication of defect

1 Test vacuum system according to function diagram 4 (83-604).

2 Test vacuum circuit I, II, III, IV, V and VI (83-620, 622 and 624).

3 Test electrical system according to wiring diagram 4 (83-605).

Test position			Results										
Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Voltmeter readout + 1.5 V - 0.5 V	Change from stage to stage after approx. s	Blower stages	Refrigerant compressor		
AUTO-LO	Cooling	ON	HEAT	open	closed	closed	20	7.0	5	5 LO			
				open	closed	closed	100	6.5	8	4 LO			
				open	closed	closed	100	6.0	4	3 LO			
				open	closed	closed	100	5.0	4	2 LO			
				open	closed	closed	100	4.5	4	1 LO			
	Mode change			closed	open	closed*	100	4.5		1 LO	on		
				closed	open	closed*	100	5.0	10	2 LO			
				closed	open	closed*	100	6.0	4	3 LO			
	Heating			closed	open	closed*	100	6.5	5	4 LO			

*) Position "closed" includes a certain portion of leak air.

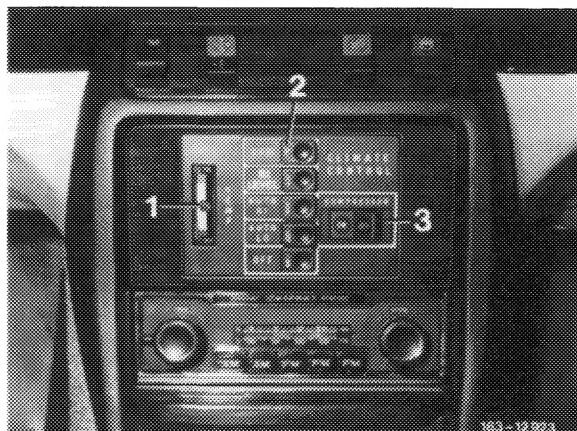
¹⁾ The blower speed in stages "HI", "BI-LEVEL" and "DEF" is noticeably higher than in stages "LO".

Remedy following indication of defect

- 1 Test vacuum system according to function diagram 5 (83-604).
- 2 Test vacuum circuit I, II, III, IV and V (83-620, 622 and 624).
- 3 Test electrical system according to wiring diagram 5 (83-605).
- 4 System remains in cooling position, test diode in pushbutton switch (2).
- 5 Perform amplifier test (83-606).

Layout of control unit

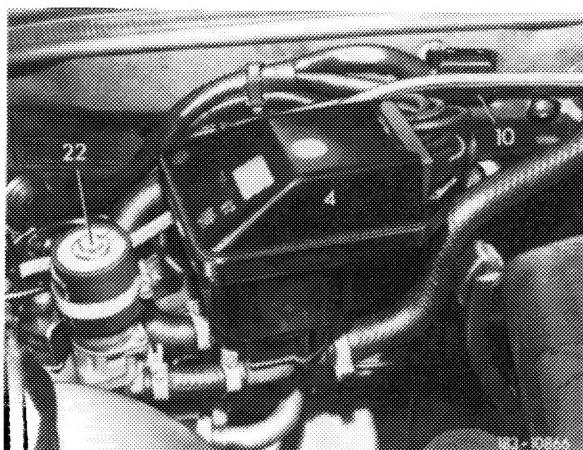
- 1 Temperature dial
- 2 Pushbutton switch
- 3 "ON/OFF" switch of refrigerant compressor



- 6 Connect new regulating valve (4) for tryout.

Layout of regulating valve with heating water pump

- 4 Regulating valve
- 22 Heating water pump
- 30 Vacuum lines



Test position			Results								
Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Voltmeter readout + 1.5 V - 0.5 V	Change from stage to stage after approx. s	Blower stages ¹	Refrigerant compressor
AUTO-HI	6	ON Heating Mode change	AC	closed	open	closed*	100	9.5	2 HI		
				closed	open	closed*	100	8.0	15	1 HI	on
				open	closed	closed	100	8.0	43	2 HI	
	Cooling		AC	open	closed	closed	100	9.5	7	3 HI	
				open	closed	closed	20	10.5			

*) Position "closed" includes a certain portion of leak air.

¹) The blower speed in stages "HI", "BI-LEVEL" and "DEF" is noticeably higher than in stages "LO".

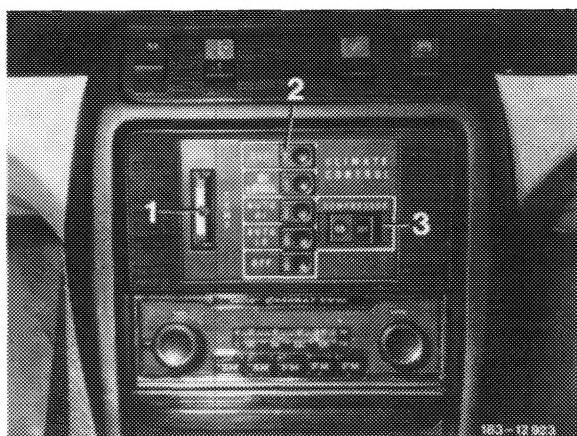
Remedy following indication of defect

- 1 Test vacuum system according to function diagram 3 (83-604).
- 2 Test vacuum circuit II, III and IV (83-620, 622 and 624).
- 3 Test electrical system according to wiring diagram 6 (83-605).
- 4 Test pushbutton switch (83-621).

Test position			Results								
Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Voltmeter readout + 1.5 V - 0.5 V	Change from stage to stage after approx. s	Blower stages	Refrigerant compressor
BI-LEVEL	7	ON	AC	open	open	open	20	9.5		2 HI	on

Remedy following indication of defect

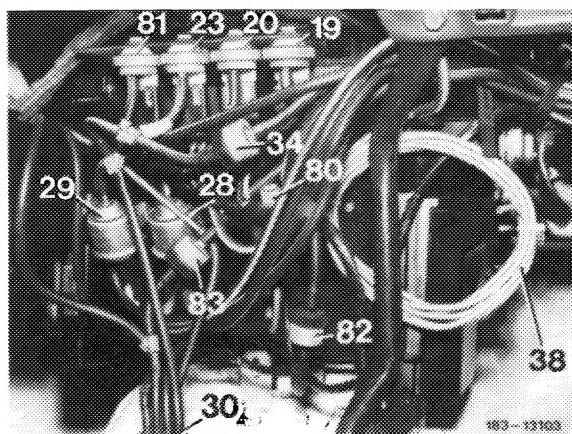
- 1 Test vacuum system according to function diagram 6 (83-604).
- 2 Test vacuum circuit III (83-622).
- 3 Test electrical system according to wiring diagram 7 (83-605).
- 4 Test pushbutton switch (2) (83-621).



Test position			Results								
Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Voltmeter readout + 1.5 V - 0.5 V	Change from stage to stage after approx. s	Blower stages	Refrigerant compressor
BI-LEVEL	8	OFF	AC	open	open	open	100	9.5		2 HI	on

Remedy following indication of defect

- 1 Test vacuum system according to function diagram 7 (83-604).
- 2 Test vacuum circuit III and IV (83-622).
- 3 Compressor switch (23) activated with a vacuum.
- 4 Test electrical system according to wiring diagram 8 and 8 a (83-605).
- 5 Test vacuum switch (23).



- 19 Vacuum switch (main switch, green)
- 20 Vacuum switch (refrigerant compressor, yellow)
- 23 Vacuum switch for refrigerant compressor (at "BI-LEVEL" only)
- 28 Switchover valve legroom flaps
- 29 Switchover valve (fresh air-recirculated air flap)
- 34 Check valve
- 38 Specified leak point
- 80 Switchover valve "BI-LEVEL" (at "DEF")
- 81 Vacuum switch (at "BI-LEVEL" only))
- 82 Check valve
- 83 Check valve

Test position			Results								
Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Voltmeter readout + 1.5 V - 0.5 V	Change from stage to stage after approx. s	Blower stages	Refrigerant compressor
BI-LEVEL	9	ON	HEAT	open	open	open	20	9.5		2 HI	
				open	open	open	20	8.5	8		
				open	open	open	100	9.5		2 HI	on
				closed	open	open	100	8.0	2	1 HI	
				closed	open	open	100	9.5	30	2 HI	

Remedy following indication of defect

- 1 Test vacuum system according to function diagram 8 (83–604).
- 2 Test vacuum circuit III and IV (83–622).
- 3 Test electrical system according to wiring diagram 9 (83–605).
- 4 Regulating valve moves from cooling to heating.

Test position			Results								
Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Voltmeter readout + 1.5 V – 0.5 V	Change from stage to stage after approx. s	Blower stages ¹⁾	Refrigerant compressor
DEF	10	ON	HEAT	closed	closed	open	100	11.0		4 HI	on

Remedy following indication of defect

- 1 Test vacuum system according to function diagram 9 (83–604).
- 2 Test vacuum circuit III and IV (83–622).
- 3 Test electrical system according to wiring diagram 10 (83–605).

B. Testing of sensor chain and temperature dial with tester

	Ambient temperature sensor	In-car temperature sensor	Temperature dial	Remedies
Pushbutton switch	AUTO-LO	AUTO-LO	AUTO-LO	Following indication of defect and complaints about temperature, test temperature sensor with ohmmeter (83–609 and 610).
Temperature dial	—	—	75 °F	
Mode switch	AC	AC	AC	
Voltmeter switch	ambient sensor	in-car sensor	temp control	
Operating condition	idle	idle	idle	
Voltmeter readout	2 to 8 V*	3 to 10 V	3 to 10 V	

* Temperature sensor may be defective even though voltage value is within tolerance.